

CLAIMS

1. A potential sensor comprising first and second detection electrodes opposed to a potential-measured object of which a potential is to be measured, and a movable shutter so positioned between said detection electrodes and said potential-measured object with gaps thereto;

wherein said movable shutter can assume a first state and a second state, said first detection electrode is exposed to the potential-measured object wider when said movable shutter assumes the first state than when said movable shutter assumes the second state, and said second detection electrode is exposed to the potential-measured object narrower when said movable shutter assumes the first state than when said movable shutter assumes the second state.

2. The potential sensor according to claim 1, comprising a substrate, first and second detection electrode assemblies of which at least either one is formed in plural parts and which are provided on said substrate, and at least one movable shutter on said two sets of the detection electrode assemblies with a gap thereto, wherein said first detection electrode assembly is exposed to a potential-measured object wider when said movable shutter assumes a first state

than when said movable shutter assumes a second state,
and said second detection electrode assembly is
exposed to the potential-measured object narrower
when said movable shutter assumes the first state
5 than when said movable shutter assumes the second
state.

3. The potential sensor according to claim 1,
wherein said movable shutter is elastically supported
movably between the first state and the second state.

10 4. The potential sensor according to claim 3,
wherein a drive frequency of said potential sensor is
substantially equal to a mechanical resonance
frequency of said movable shutter.

5. The potential sensor according to claim 1,
15 wherein said movable shutter is so constituted as to
be controlled by a magnetic field generation means
which generates a magnetic field substantially
perpendicularly to a movable direction of said
movable shutter and a current application means which
20 supplies said movable shutter with a current
substantially perpendicularly to the movable
direction of said movable shutter and to a direction
of said magnetic field, thereby assuming said first
state and said second state.

25 6. The potential sensor according to claim 5,
wherein said magnetic field generation means is a
permanent magnet or an electromagnetic coil.

7. The potential sensor according to claim 1, comprising two or more movable shutters and at least two current application means which supplies said movable shutters with currents substantially
5 perpendicularly to the moving directions of said movable shutter, whereby said first state and said second state can be assumed by an interaction of the currents supplied to said movable shutters.

8. An image forming apparatus comprising a
10 potential sensor according to claim 1 and an image forming means which controls an image formation based on an output of said potential sensor.

9. A potential measuring method comprising:
a step of positioning a potential sensor
15 including first and second electrodes and a movable shutter for selectively masking said two electrodes, in which said movable shutter can assume a first state and a second state, said first electrode is exposed wider when said movable shutter assumes the
20 first state than when said movable shutter assumes the second state, and said second electrode is exposed narrower when said movable shutter assumes the first state than when said movable shutter assumes the second state, and a potential-measured
25 object in such a manner that said movable shutter is positioned between said potential sensor and said potential-measured object; and

a step of switching said movable shutter
between said first state and said second state, and
measuring a potential of said potential-measured
object based on a change in an electrostatic
5 capacitance generated between said first and second
electrodes and said potential-measured object.